REMEDIAL SITE ASSESSMENT DECISION - EPA NEW ENGLAND

Site Name: J.F. Fredericks Tool Company **EPA ID#:** CTD983876251

Alias Site Names: _____

Address: 25 Spring Lane **City:** Farmington **State:** CT

Refer to Report Dated: 04-01-98 **Report type:** SI

Report developed by: RFW START

DECISION:

| | **1. Further Remedial Site Assessment under CERCLA (Superfund) is not required because:**

| | 1a. Site does not qualify for further remedial site assessment under CERCLA (No Further Remedial Action Planned - NFRAP)

| 1b. Site may qualify for further action, but is deferred to: | | RCRA | | NRC

| X| **2. Further Assessment Needed Under CERCLA:** 2a. (optional) Priority: |X | Higher | | Lower

2b. Activity Type: | | PA | | SI | | ESI | | HRS evaluation

| X] Other: Further evaluation needed

DISCUSSION/RATIONALE:

Dcumented groundwater contamination and impacted receptors.

Documented surface water contamination and impacted receptors.

Report Reviewed and Approved by:

Don Smith Signature: Don Smith Date: April 6, 1998

Site Decision Made by:

Don Smith Signature: Don Smith Date: April 6, 1998

EPA Form # 9100-3

FINAL SITE INSPECTION REPORT
FOR
J.F. FREDERICKS TOOL COMPANY
FARMINGTON, CONNECTICUT

CERCLIS No. CTD983876251
TDD No. 97-04-0023

Prepared by:

Roy F. Weston, Inc. (WESTON®)
Superfund Technical Assessment and Response Team (START)
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1 April 1998

Region I START
Reviewed and Approved:

Erin L. FitzPatrick
Site Leader

1 April 1998
Date

Daniel Keefe
Project Leader

4/1/98
Date

QA Review

4/1/98
Date

Work Order No. 11098-021-001-2389-70

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DISCLAIMER

This report was prepared solely for the use and benefit of the U.S. Environmental Protection Agency Region I (EPA Region I), Office of Site Remediation and Restoration for the specific purposes set forth in the contract between the EPA Region I and the Roy F. Weston, Inc. (WESTON®), Superfund Technical Assessment and Response Team (START). Professional services performed and reports generated by START have been prepared for EPA Region I purposes as described in the START contract. The information, statements, and conclusions contained in the report were prepared in accordance with the statement of work, and contract terms and conditions. The report may be subject to differing interpretations or misinterpretation by third parties who did not participate in the planning, research or consultation processes. Any use of this document or the information contained herein by persons or entities other than the EPA Region I shall be at the sole risk and liability of said person or entity. START, therefore, expressly disclaims any liability to persons other than the EPA Region I who may use or rely upon this report in any way or for any purpose.

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J.F. Fredericks Tool Company
Farmington, Connecticut

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Work Order No. 11098-021-001-2389-70

INTRODUCTION

The Roy F. Weston, Inc. (WESTON®) Superfund Technical Assessment and Response Team (START) was requested by the U.S. Environmental Protection Agency Region I (EPA Region I), Office of Site Remediation and Restoration to perform a Site Inspection (SI) of the J.F. Fredericks Tool Company (Fredericks) property at 25 Spring Lane in Farmington, Connecticut. Tasks were conducted in accordance with the SI scope of work and technical specifications provided by EPA Region I. A Preliminary Assessment (PA) Report for the Fredericks property was prepared by the Connecticut Department of Environmental Protection (CT DEP) on 9 March 1992. The CT DEP determined that due to the presence of chlorinated compounds in nearby public drinking water supplies, and since Fredericks is a generator and handler of waste 1,1,1-trichloroethane (1,1,1-TCA), further investigation under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was recommended. On the basis of the information provided in the PA report, the Fredericks SI was initiated.

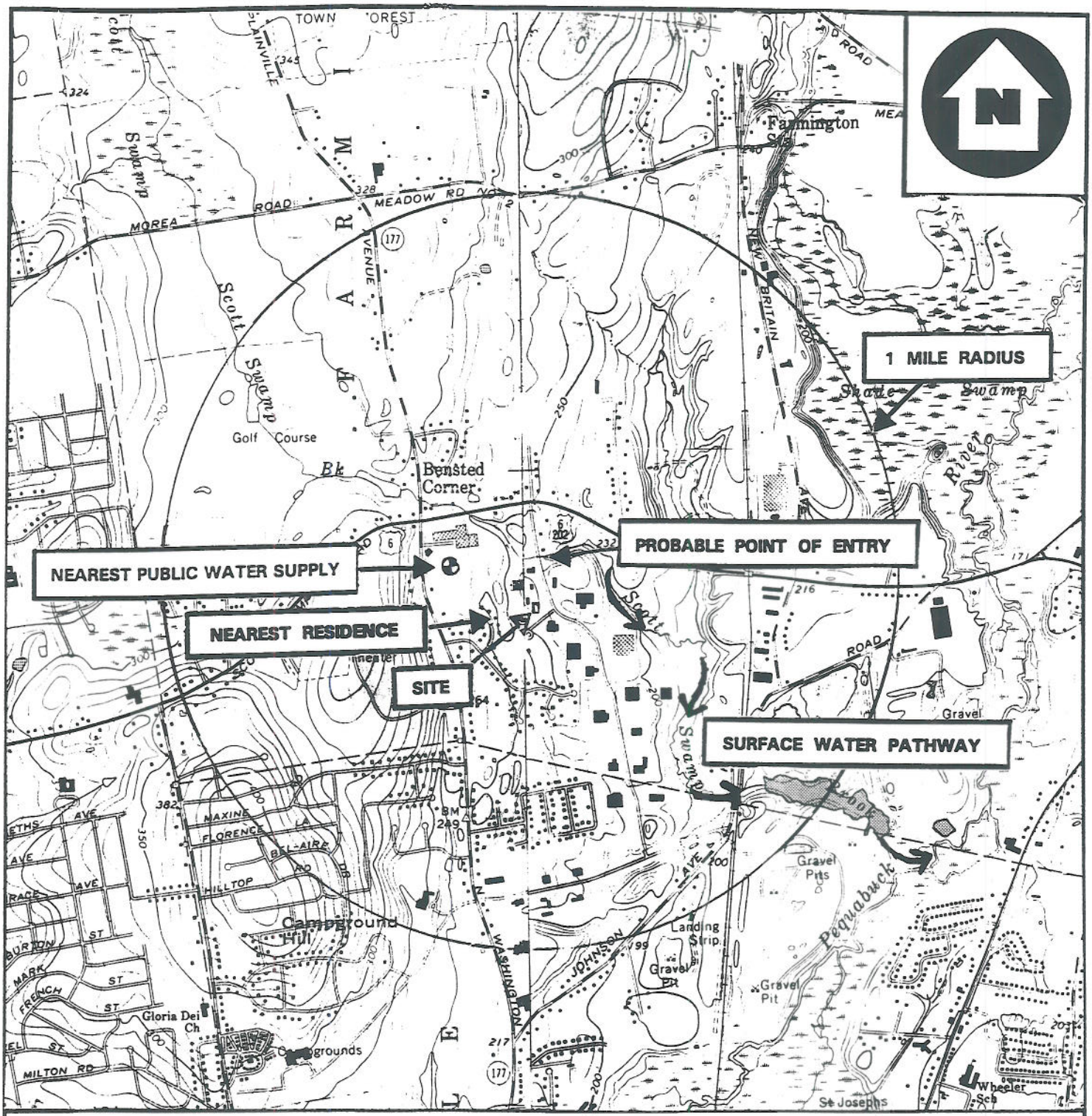
Background information used in the generation of this report was obtained through file searches conducted at EPA Region I and CT DEP, telephone interviews with town officials, conversations with persons knowledgeable of the Fredericks property and conversations with other Federal, State, and local agencies. Additional information was gathered during the START on-site reconnaissance on 19 August 1997.

This package follows the guidelines developed under CERCLA, as amended, commonly referred to as Superfund. However, these documents do not necessarily fulfill the requirements of other EPA Region I regulations such as those under the Resource Conservation and Recovery Act (RCRA) or other Federal, State, or local regulations. SIs are intended to provide a preliminary screening of sites to facilitate EPA Region I's assignment of site priorities. They are limited efforts and are not intended to supersede more detailed investigations.

SITE DESCRIPTION

The Fredericks property is located at 25 Spring Lane in the Farmington Industrial Park (FIP) in Farmington, Hartford County, Connecticut (Figure 1). The geographic coordinates as measured from the center of the property are 41° 42′ 11.5″ north latitude and 72° 52′ 26.5″ west longitude [2]. The legal description as recorded by the Farmington Tax Assessor's Office is Map 76, Lot 20. According to this information, the commercially zoned lot consists of 5 acres, and is owned by Roger J. Fredericks [2; 4; 7].

The Fredericks property consists of a single-story building located near the center of the property. The property is bordered by Apex Machine and Tool Company to the north, Spring Lane to the east, Right Lane to the south, and wooded land to the west (Figure 2). The nearest residence is located at 10 Fable Lane, approximately 600 feet west of the Fredericks property [3; 4; 6; 8; 37; 38]. The Fredericks property slopes gradually from the northwest to the



LOCATION MAP

J.F. FREDERICKS TOOL COMPANY, INC.
25 SPRING LANE
FARMINGTON, CONNECTICUT

WESTON® MANAGERS DESIGNERS/CONSULTANTS
REGION I SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

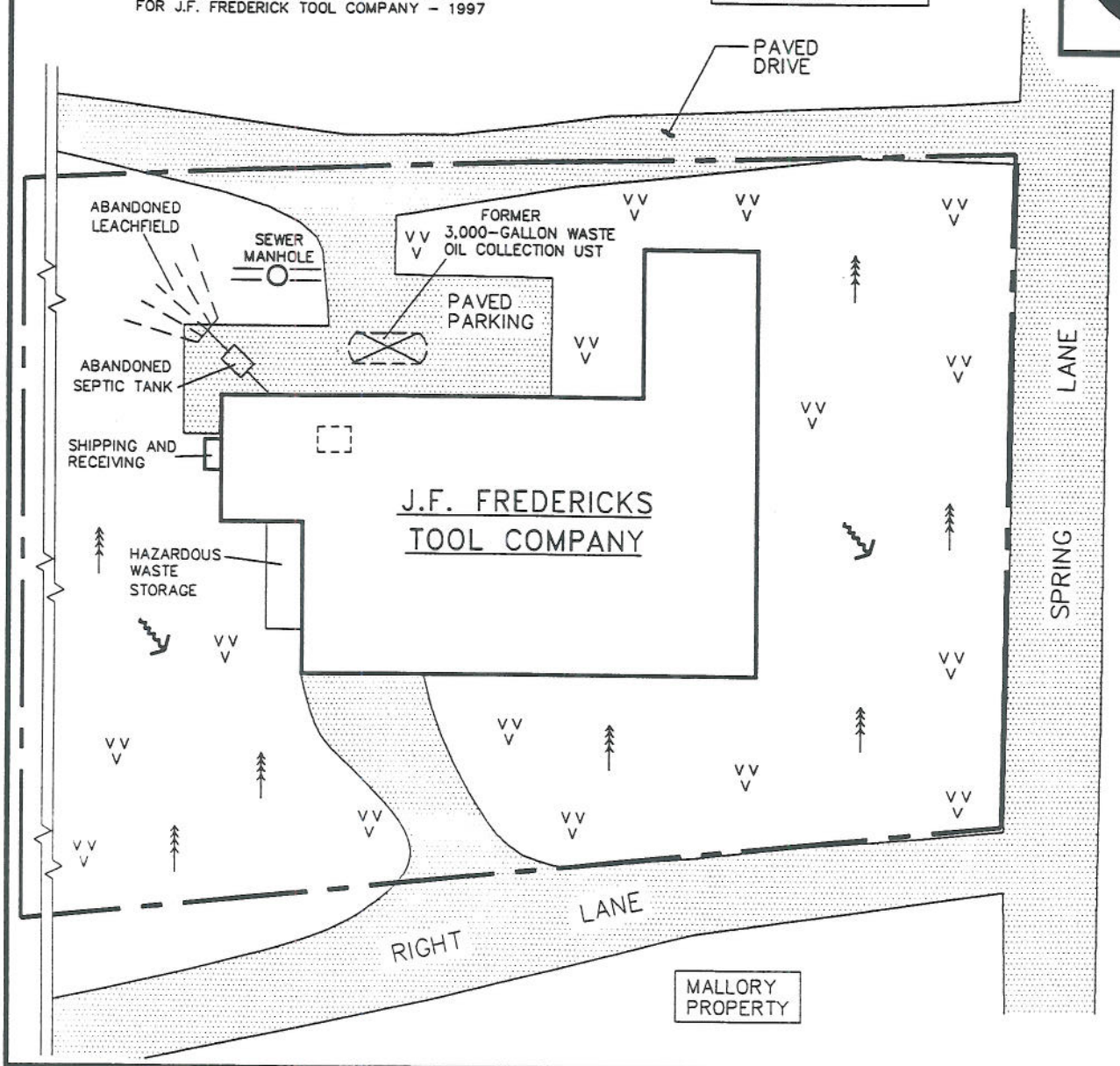
TDD #	DRAWN BY:	DATE
97-04-0023	E. FITZPATRICK	8/14/97

FILE NAME:	
S:\97040023\FREDER1.DWG	FIGURE 1

SOURCES: CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION
PRELIMINARY ASSESSMENT REPORT FOR J.F. FREDERICK
TOOL COMPANY – 1992

FIP CORPORATION VICINITY MAP – NOT DATED

WESTON/START FIELD BOOK NO. 002148-S
FOR J.F. FREDERICK TOOL COMPANY – 1997



NOT TO SCALE

LEGEND

- FORMER UNDERGROUND STORAGE TANK (UST)
- GRASS AREA
- PROPERTY LINE
- GROUNDWATER FLOW DIRECTION
- FILTRATION TANK (BELOW GROUND VAULT)
- WOODS

SITE SKETCH

J.F. FREDERICKS TOOL COMPANY
25 SPRING LANE
FARMINGTON, CONNECTICUT

WESTON® MANAGERS DESIGNERS/CONSULTANTS
REGION I SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

TDD #	DRAWN BY:	DATE
97-04-0023	W. SHAW	8/28/97

FILE NAME: S:\97040023\FRED2

FIGURE 2

southeast [3; 4; 6]. There are no stormwater catchbasins located on the Fredericks property. There are no on-site monitoring wells, and physical and vehicular access to the property is unrestricted [3].

On 19 August 1997, START personnel conducted an on-site reconnaissance of the Fredericks property in order to verify facility information, to collect waste generation and disposal information, and to tour the operating facility. The facility and grounds located on the Fredericks property appeared to be in good condition. A hazardous materials storage area is located in a secured area within the building. At the time of the START reconnaissance, this area contained two 250-gallon plastic totes. One was used for the storage of waste oil, and the other for wastewater. Eight drums containing scrap metal, one drum containing wastewater filter sludge, and five drums of virgin materials (such as coolants, lubricants, and oils) were also located in this area. The entire storage area is surrounded by a concrete berm to contain any potential spills. No drums were observed outside the facility, or in undesignated areas inside the facility [3].

OPERATIONAL AND REGULATORY HISTORY AND WASTE CHARACTERISTICS

Fredericks was established in 1968 by Hazel V. and Joseph F. Fredericks as a light manufacturer of small aircraft parts and electrodes. Fredericks has been the only facility conducting operations on this property since the facility was constructed. In 1978, Roger J. Fredericks purchased the property and continued similar operating procedures, such as milling, grinding, cutting, drilling, and shaping metal [3; 6].

According to available file information, the manufacturing process consists of four primary phases: general machining, parts washing, tumbling/deburring, and degreasing [6]. During the START on-site reconnaissance on 19 August 1997, machining processes were noted to include cutting, grinding, sanding, and shaping. Degreasing metal components is no longer performed, and chlorinated solvents are no longer used on the Fredericks property [3].

Wastestreams that are currently generated by Fredericks include scrap metal, sludge, wastewater, and waste oils. Fredericks currently utilizes a recycling/filtration system that enables some of their process waste to be reused. Waste oils are collected by a system of pipes which discharge to a common storage tank where they are filtered and piped back to the machining areas. Cooling water is similarly filtered prior to reuse. When either filtration system is not able to sufficiently reclaim the fluids, the fluids are sent to the hazardous materials storage area where they are stored in either a 250-gallon waste oil tote or a 250-gallon wastewater tote. Scrap metal and sludge materials are stored in 55-gallon drums, also located in the hazardous materials storage area. Periodically, the totes and drums are transported off site for disposal [3].

Table 1 summarizes the types of wastes generated by Fredericks. The methods of waste disposal were obtained from available files and are not necessarily representative of current disposal procedures [6].

Table 1

Historical Wastes Generated by the J.F. Fredericks Tool Company, Inc.

Process	Description	Wastes Generated	Storage	Disposal
General Machining	Milling, drilling, and turning of metal parts.	Metal scraps	55-gallon drum	Collection and off-site disposal
		Cutting oil (water soluble)	3,000-gallon UST	Collection and off-site disposal
Parts Washing	Metal products are washed with an alkaline cleaner.	Spent cleaner	1,000-gallon holding tank	Collection and off-site disposal
Tumbling/ deburring	Parts are deburred with a solution consisting of water and detergent.	Mixture of detergent and metal grit	Unknown	Unknown
Degreasing	Ten cold dip units, each holding 2 quarts of 1,1,1-TCA.	1,1,1-TCA	3,000-gallon UST	Collection and off-site disposal
Facility Operation	General wastes derived from the daily operation of the facility.	Sanitary wastes	Septic tank and leachfield (since 1982, municipal sewers)	Septic tank and leachfield

UST = underground storage tank
1,1,1-TCA = 1,1,1-trichloroethane
NA = Not Applicable

Prior to circa 1980, public sewer service was generally not available in the FIP; sanitary waste as well as process waste were reportedly discharged to on-site septic systems, dry wells, or some combination of these systems. In general, on-site disposal of wastes ceased throughout the FIP between 1980 and 1983 as properties were connected to the public sanitary sewer service. Since 1982, Fredericks has been connected to the municipal sewer system and no longer uses the on-site septic system, which consisted of a septic tank and leachfield of unknown size [15; 64].

After 1980, several FIP properties filed as generators of hazardous waste with the EPA under the requirements of RCRA; however, Fredericks is not listed as a RCRA generator [9].

A 3,000-gallon concrete underground storage tank (UST) was located beneath the paved parking area near the driveway on the northern side of the property. The tank was used from 1968 to 1994 and was removed in 1995. According to available information, the UST was permitted to hold water-soluble wastes. However, according to a 1980 CT DEP report (Form P-5), the UST was used to hold waste oils and 1,1,1-TCA [80]. In a 17 November 1997 letter, representatives of the Fredericks property state that the 1980 CT DEP report is in error [81].

During a 1983 CT DEP inspection, CT DEP suggested that Fredericks' waste storage and disposal practices be modified. The inspector suggested that 1,1,1-TCA should not be mixed with waste oils and should be disposed of separately as a hazardous waste [6].

In 1984, 2,400 pounds of waste 1,1,1-TCA mixed with cutting oils was manifested and transported off site. An additional four drums (approximately 200 gallons) of this mixture was removed from the property in 1985 and again in 1986 [6]. The location of the area where the drums were stored awaiting off-site disposal is unknown.

In 1992, CT DEP conducted a PA of the Fredericks property under the Multi-Site Cooperative Agreement (MSCA) between the State of Connecticut and EPA. This PA was undertaken as part of the site screening process outlined in the National Contingency Plan (NCP) and consisted of a file review and perimeter survey. The PA report addressed Fredericks' potential role in the contamination of nearby drinking water supply wells. Contamination has been documented in the four FIP wells and in the two Johnson Avenue wells, public water supply wells located approximately 0.70 miles and 0.60 miles southeast, respectively, of the property.

As of 1997, WESTON has completed Site Inspection Prioritization (SIP) evaluations of 15 properties within the FIP. In 1995, WESTON collected several groundwater, sediment, and surface water samples to evaluate the FIP as a whole. Information obtained from these investigations has been utilized as part of the Fredericks SI.

Table 2 presents identified structures or areas on the Fredericks property that are documented or potential sources of contamination, the containment factors associated with each source, and the relative location of each source.

Table 2

Source Evaluation for
J.F. Fredericks Tool Company

Source Area	Containment Factors	Spatial Location
Septic System	None	Northwest of building
Former 3,000-gallon UST	None	Northern portion of property
Hazardous materials storage area (Drums and tanks)	Concrete berm	Northwest corner of facility
Filtration system	Concrete vault	Basement portion of building
Former drum storage area	None	Unknown

UST = underground storage tank

[3; 6]

Table 3 summarizes the types of potentially hazardous substances which have been disposed, used, or stored on the Fredericks property.

Table 3

Hazardous Waste Quantity for
J.F. Fredericks Tool Company

Substance	Quantity or Volume/Area	Years of Use/Storage	Years of Disposal	Source Area
1,1,1-TCA and waste oils	3,000 gallons	1968 - 1994	Unknown	UST
1,1,1-TCA and waste oils	2,400 lbs/year	1984 - Unknown (prior to 1989)	1984 - Unknown (prior to 1989)	Former drum storage area
Unknown	Unknown	NA	1968 - 1982	Septic system (tank and leachfield)
Waste oils	250 gallons	Unknown - present	Unknown	Hazardous materials storage area

1,1,1-TCA = 1,1,1-trichloroethane
UST = Underground storage tank
NA = Not Applicable

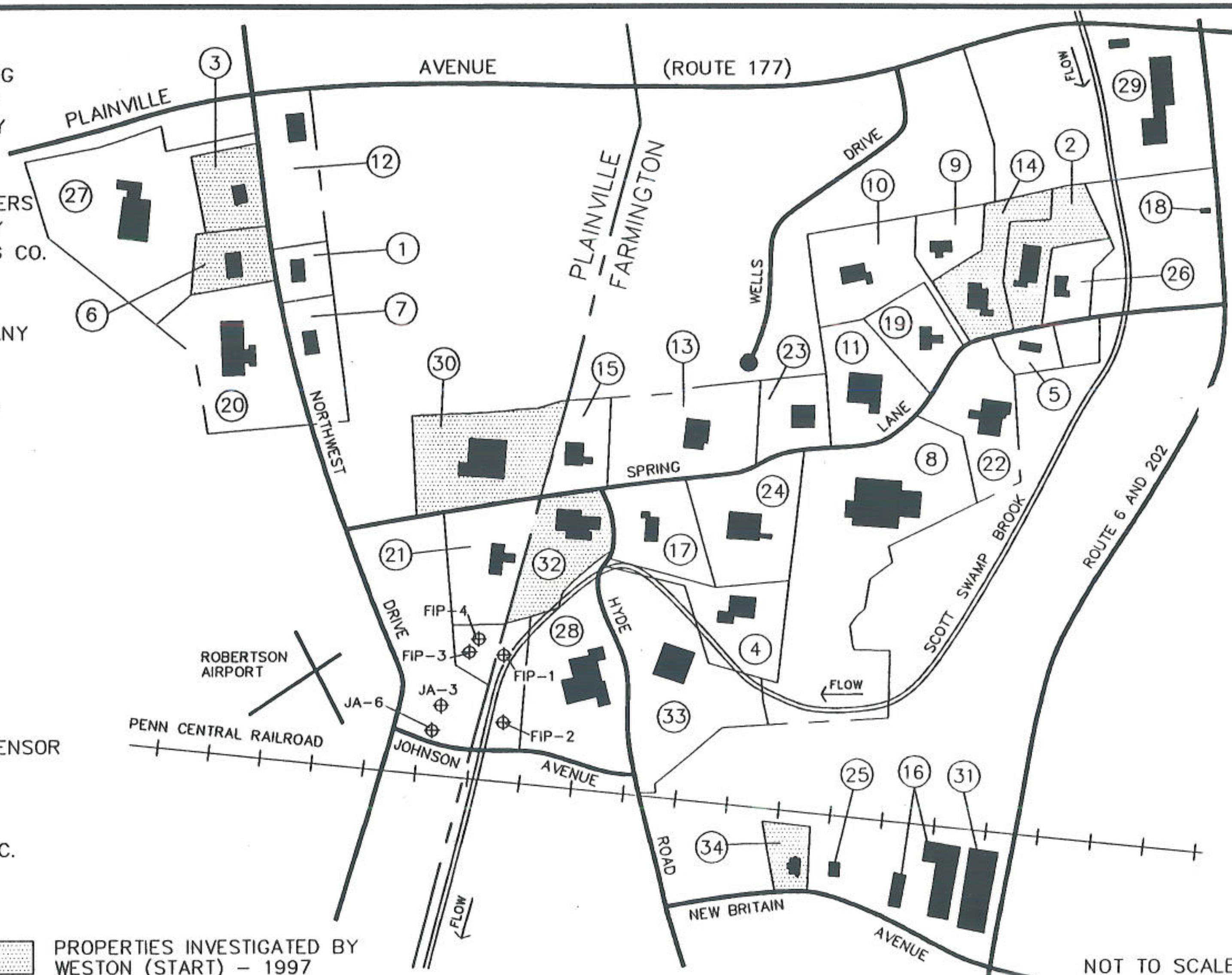
[3; 6]

The Fredericks property is located within the FIP (Figure 3). For the purposes of this report, the FIP consists of 34 properties located in Farmington and Plainville, Connecticut. Other industries within the FIP include laboratories, metal working shops, and machine shops. These industries perform processes such as cutting, milling, drilling, lathing, grinding, degreasing, painting, metal plating, and machinery assembly. There are 18 facilities within the FIP that are listed in the RCRA database as being generators of hazardous waste. Ten of the 18 facilities are also listed on the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database. Based on an October 1997 listing of the CERCLIS database, 28 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites are located in the FIP, including the abutting property Apex Machine and Tool Company (CERCLIS No. 983876228) [8].

Table 4 lists the FIP properties listed on the CERCLIS database.

LIST OF COMPANIES

1. AMERICAN TOOL & MANUFACTURING
2. APEX MACHINE & TOOL COMPANY
3. B & L TOOL & MACHINE COMPANY
4. BAUER AEROSPACE, INC.
5. SPRING LANE BUSINESS CENTER
6. BEEKLEY CORPORATION/BIOPOLYMERS
7. BROWN MANUFACTURING COMPANY
8. CONNECTICUT SPRING & STAMPING CO.
9. GERALD S. & JAMES G. BIONDI
10. DELL MANUFACTURING COMPANY
11. EDMONDS MANUFACTURING COMPANY
12. ESCO LABORATORIES, INC.
13. FLETCHER-TERRY COMPANY
14. J. F. FREDERICKS TOOL COMPANY
15. OWNED BY: RONALD PHILLIPS
16. GROS-ITE INDUSTRIES, INC.
17. KIP, INC.
18. MAIER
19. MALLORY INDUSTRIES, INC.
20. MODERN WOODCRAFTS
21. MOTT METALLURGICAL COMPANY
22. NEW ENGLAND AIRCRAFT NO. 1
23. NEW ENGLAND AIRCRAFT NO. 2
24. NEW ENGLAND CLOCK COMPANY
25. ROY MACHINERY & SALES
26. SEILERS
27. TRANSAMERICA DELAVAL, GEMS SENSOR
28. TRUMPF INDUSTRIES, INC.
29. TUNXIS COMMUNITY COLLEGE
30. WASLEY PRODUCTS, INC.
31. WHITNON MANUFACTURING CO., INC.
32. ELECTRONIC COIL CORPORATION
33. EBM MANUFACTURING
34. DAYON MANUFACTURING, INC.



LEGEND	SITE MAP	WESTON MANAGERS DESIGNERS/CONSULTANTS REGION I SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
FIP JA ⊕ OVERBURDEN WELL	FARMINGTON INDUSTRIAL PARK FARMINGTON AND PLAINVILLE CONNECTICUT	TDD # 97-04-0020; DRAWN BY: W. SHAW; DATE 10/20/97
SOURCES: FARMINGTON TOWN ASSESSOR'S RECORDS; PLAINVILLE TOWN ASSESSOR'S RECORDS		FILE NAME: S:\97040023\FRED3; FIGURE 3

Table 4

CERCLA Sites Within the Farmington Industrial Park

CERCLIS No.	Site Name	Address	RCRA generator
CTD983876228	Apex Machine and Tool Company	21 Spring Lane	No
CTD055506323	Bauer Aerospace, Inc.	Hyde Road	No
CTD001143007	Connecticut Spring and Stamping Company	48 Spring Lane	Yes*
CTD980671580	Dayon Manufacturing, Inc.	1820 New Britain Avenue	No
CTD001139336	Dell Manufacturing Company	Right Lane	No
CTD054187455	Edmunds Manufacturing Company	45 Spring Lane	Yes
CTD983876244	Electronic Coil Corporation	145 Hyde Road	No
CTD001145309	Fletcher-Terry Company	65 Spring Lane	Yes
CTD982543670	Gross-Ite Industries, Inc.	1790 New Britain Avenue	No
CTD001142074	Hayes, Inc.	150 New Britain Avenue	No
CTD983876251	J.F. Fredericks Tool Company	25 Spring Lane	No
CTD064844426	KIP, Inc.	72 Spring Lane	Yes
CTD001148568	Mallory Industries, Inc.	33 Spring Lane	No
CTD059831479	New England Aircraft Plant #1	36 Spring Lane	No
CTD982710535	New England Aircraft Plant #2	55 Spring Lane	No
CTD983876269	Omega Corporation	81 Spring Lane	Yes*
CTD001143957	Roy Machinery and Sales	1810 New Britain Avenue	No
CTD983874330	Trumpf Industries, Inc.	111 Hyde Road	Yes
CTD052538105	Whitnon-Spindle	Route 6 & New Britain Avenue	Yes
CTD018659805	Robert E. Parson's, Inc.	750 Farmington Avenue	Yes
CTD001148949	American Tool and Manufacturing	71 Northwest Drive	No
CTD001150424	B&L Tool and Machine Company	76 Northwest Drive	No
CTD982547408	Beekley Corp./Bio-Polymers, Inc.	74 Northwest Drive	No
CTD001149038	Brown Manufacturing, Inc.	75 Northwest Drive	Yes
CTD001139310	Esco Laboratories, Inc.	83 Northwest Drive	No
CTD980524193	Mott Metallurgical Company	84 Spring Lane	No
CTD065511966	Fransamorca Delaval, Gems Senson	Cowles Road	No
CTD000844373	Wasley Products, Inc.	87 Spring Lane	Yes

* The company is listed at different addresses in CERCLIS and RCRIS databases.
[8]

WASTE/SOURCE SAMPLING

Two soil samples were collected from the area near the building foundation and parking lot area during the UST excavation in 1995. Samples were analyzed by Northeast Laboratories, Inc. for petroleum hydrocarbons. Analytical results of the samples indicated no petroleum hydrocarbons above the detection limits (1 milligram per kilogram (mg/kg)) [68; 71]. No other known waste/source sampling has been conducted at the Fredericks property.

GROUNDWATER PATHWAY

Prior to 1960, areas within the FIP were used as farmland [1]. Soil maps for Hartford County report the soil type at the Fredericks property as Hinckley and Merrimack, an excessively drained soil with sandy and gravelly substratum on terraces [12]. Surficial geology of the area beneath the Fredericks property has been mapped as glacial collapsed stratified drift deposits [12]. These deposits are associated with deltaic deposits comprised of stratified sand and gravel, overlying glacial till. The occurrence of sand and gravel in the deposits indicates that the overburden permeability at the property is moderate to high. The underlying glacial till is presumed to be present continuously beneath sand and gravel throughout the Pequabuck River Valley within 2-radial miles of the property, based on its occurrence in all of the boring logs for monitoring wells installed in the vicinity of Scott Swamp Brook and the Pequabuck River [14, Appendix 1].

Bedrock geology beneath the property has been mapped as Triassic New Haven Arkose, which makes up a large part of the Central Lowlands of Connecticut. New Haven Arkose is a reddish, poorly sorted sandstone and conglomerate. This central region of Connecticut contains several large fault zones that strike approximately north 50° east, with dip angles near vertical [13]. Depth to bedrock beneath the Fredericks property is estimated to be between 50 and 60 feet below ground surface (bgs) [14, pp. 21,48-49]. No bedrock formation mapped within 4-radial miles of the property exhibits karst characteristics.

Based on a number of soil borings and monitoring wells installed within the FIP, the depth to groundwater ranges from 10.9 to 37 feet bgs [62; 63; 68]. Groundwater quality is classified as category GB/GA; this water may not be suitable for direct human consumption without need for treatment due to waste discharges, spills, or leaks of chemicals, or land use impacts [70].

The Pequabuck River Valley overburden aquifer in the vicinity of Scott Swamp Brook is bordered to the west by collapsed stratified drift, kame, and glacial till deposits, and to the east by bedrock outcrops. The Pequabuck River Valley overburden aquifer begins at the Quinnipiac River Valley in the south, and terminates beneath the Farmington River in Avon, Connecticut [14, p. 22]. Beneath the Fredericks property, the direction of groundwater flow is assumed to be southeast, flowing toward the FIP and Johnson Avenue wells [14, Figure 9]. Average rainfall for the Town of Farmington is 49.06 inches per year [10].

All or part of the following Connecticut cities and towns are located within 4-radial miles of the FIP properties: Bristol (population 60,640), Burlington (population 7,026), New Britain (population 72,513), Farmington (population 20,608), Plainville (population 17,197), and Southington (population 38,212) [17, pp. 63-64; 35; 36; 37; 38]. The nearest public well is

located 0.25 miles west of the property. The estimated population served by public groundwater sources within 4-radial miles of the property is 80,652 [5].

The Bristol Water Department (BWD) operates two separate public water supplies. One supply (BWD Well No. 1) is located in the western part of the town, and relies on combined groundwater and surface water sources. The groundwater sources for BWD Well No. 1 are more than 4-radial miles, and the surface water sources are not located along the downstream pathway from the Fredericks property [18, p. 50; 21; 22]. The second supply serves approximately 20,000 people and consists of BWD Well No. 2 and the Mix Street Wells. BWD Well No. 2 is a 75-foot deep overburden well located approximately 2.45 miles southwest of the Fredericks property and contributes 50% of the total supply [18, p. 50; 22]. The other 50% of the supply (no further breakdown is available) is obtained from the three Mix Street Wells, which are 55-foot deep overburden wells located approximately 2.75 miles west of the property [18, p. 50; 22, 80, 81]. For the purposes of this report, the three Mix Street Wells are assumed to contribute equally to the system, each serving 3,334 persons [38]. The remainder of the population of Bristol is presumed to rely on private drinking water wells and groundwater sources from outside the 4-mile radius from the property.

A small section of the southeast corner of the Town of Burlington is located within 4-radial miles of the Fredericks property. No municipal water supplies have been identified in this area; however, there are two community water supplies within this area of Burlington: the Farmington Line West Condominium Well, 2.6 miles northwest of the Fredericks property, and the Woodcrest Association Well, which is 2.6 miles northwest of the Fredericks property. The wells serve 34 and 60 people, respectively; no data regarding well screen depths or source media are available [19; 21; 26; 27]. The remainder of the Town of Burlington relies on private wells.

The New Britain Water Department (NBWD) supplies water to an estimated 90,677 persons, including residents of Farmington, Kensington, New Britain, Newington, and Plainville. The municipal supply is provided by seven groundwater wells and six reservoirs. Five of the wells are located beyond 4-radial miles of Fredericks, and none of the six reservoirs are located along the downstream pathway from the Fredericks property [18, p. 51; 39]. The White Bridge Wells, two overburden wells located approximately 2.2 miles west of the Fredericks property, provide 28.6% of the total NBWD annual water supply and serve approximately 25,900 people [21; 39]. Two additional bedrock wells, the Tilcon Water Supply Wells (formerly known as the Angelo Tomasso, Inc. wells), serve an office park located approximately 3.2 miles southeast of the Fredericks property and serve approximately 26 people [76].

The Metropolitan District Commission (MDC) supplies water to some residents of Farmington, as well as to other communities in the greater Hartford area. The supply is provided from reservoirs that are not located along the downstream pathway from the FIP properties [18, pp. 35, 36; 28].

The Plainville Water Company (PWC) provides drinking water to residents of Farmington and Plainville. The PWC maintains a blended system of five overburden wells which serves a total of approximately 20,000 people. Two of the PWC overburden wells are located 0.60 miles southeast of the Fredericks property. Prior to distribution, water from these wells is air-stripped due to solvent contamination. These wells, known as Johnson Avenue Wells Nos. 3 and 6,

account for 27.4% of the system's annual total water supply, serving an estimated 5,480 persons [21]. These wells are screened in the lower portion of the Pequabuck River Valley overburden aquifer, at depths of 80 to 93 and 92 to 110 feet bgs, respectively [14, Appendix 1]. The remaining three PWC wells are located 2.5 miles southeast of the property and are known as the Woodford Avenue Wells. These wells supply 72.6% of the system's total annual water supply, serving an estimated 14,520 persons [18, p. 51; 22; 29; 30; 32]. These wells are also screened in the Pequabuck River Valley overburden aquifer at a point upgradient of the FIP area [18, p. 51; 14, Figures 3 and 5]. The Cope Manor Rest Home in Plainville maintains a bedrock well which provides drinking water to an estimated 92 patients and staff and is located approximately 1.75 miles southwest of the property [19; 34]. Ciccio Court Apartments, located approximately 3.55 miles south of the property, also maintains a well in Plainville serving an estimated 80 people [18, p. 35; 19; 75].

The Unionville Water Company (UWC) provides drinking water to many residents in Farmington. The UWC system consists of wellfields at five locations in Farmington. None of these wellfields are completed in the Pequabuck River Valley overburden aquifer. The Wells Acres Well, located 0.25 miles west of the property, is screened in bedrock and serves an estimated 1,588 persons. [18, p. 51]. The Connecticut Sand & Stone Well, located in Farmington 2.65 miles northeast of the property, serves an estimated 1,588 persons [21; 23; 31; 67]. The UWC maintains the Charles House Wellfield, comprised of five overburden wells located in Farmington approximately 4.0 miles northwest of the property which serve an estimated 7,940 persons. The UWC also maintains the Pondwood Well, located in Farmington approximately 2.5 miles north of the property, which serves an estimated 1,588 persons [21; 23; 31; 67]. The UWC also maintains a wellfield comprised of four wells that provide water to the FIP, which are named FIP Well Nos. 1 through 4. The wells are located immediately southeast of the FIP [18, p. 35; 31; 39]. FIP wells 1 and 2 are used for emergency purposes, such as fire protection. Available information suggests that the water from wells 3 and 4 is used for both manufacturing processes and potable water purposes at the FIP [67]. However, several businesses in the FIP reportedly use bottled drinking water. The FIP wells serve an estimated 1,024 workers at businesses within the FIP [40]. The annual contribution of each well to the system is based on 1994 annual production figures [21; 33]. All four of the wells are screened in the lower portion of the Scott Swamp Brook Valley overburden aquifer [14, pp. 3-4]. Several smaller community water systems are also located in Farmington. The Winthrop Drive Duplex well serves approximately 20 people and is located 0.8 miles north of the Fredericks property [74]. The Farmington Water Company wells are located 2.6 miles east of the Fredericks property; these two wells were taken out of commission prior to 1985 [73]. The two Lakeview Apartment wells are located 3.0 miles north of the Fredericks property and serve approximately 642 people [74].

Parts of Southington lie within 4-radial miles of the property, but there are no Southington municipal water supply sources that are located within 4-radial miles of the subject property. However, one community water supply is located approximately 3.85 miles south of the property at the Apple Valley Village Apartments and serves an estimated 70 people [18, p. 50; 19; 26].

Table 5 summarizes public groundwater supply sources located within 4-radial miles of the property [18, pp. 35, 36, 50, 51; 19; 21; 35; 36; 37; 38; 67].

Table 5

Public Groundwater Supply Sources within 4-Radial Miles of J.F. Fredericks Tool Company

Distance/ Direction from Site	Source Name	Location of Source[a]	Estimated Population Served	Source Type[b]
0.25 miles West	UWC Wells Acres	Farmington	1,588	1 bedrock well
0.60 miles Southeast	PWC Johnson Avenue Well No. 6	Plainville	2,740	1 overburden well
0.60 miles Southeast	PWC Johnson Avenue Well No. 3	Plainville	2,740	1 overburden well
0.70 miles Southeast	UWC FIP Well No. 4	Plainville	477	1 overburden well
0.70 miles Southeast	UWC FIP Well No. 3	Plainville	547	1 overburden well
0.70 miles Southeast	UWC FIP Well No. 1*	Farmington	0	1 overburden well
0.70 miles Southeast	UWC FIP Well No. 2*	Farmington	0	1 overburden well
0.80 miles West	Winthrop Drive Duplexes	Farmington	20	Unknown
1.75 miles Southwest	Cope Manor	Plainville	92	1 bedrock well
2.20 miles West	NBWD White Bridge Wells	Bristol	25,900	2 overburden wells
2.45 miles Southwest	BWD Well No. 2	Bristol	10,000	1 overburden well
2.50 miles Southeast	PWC Woodford Avenue Wells	Plainville	14,520	3 overburden wells
2.50 miles North	UWC Pondwood Well	Farmington	1,588	1 bedrock well
2.60 miles Northwest	Farmington Line West Condominium	Burlington	34	Unknown
2.60 miles Northwest	Woodcrest Association	Burlington	60	Unknown
2.60 miles East	Farmington Water Co. (Wadsworth Reservoir)	Farmington	0	Unknown
2.65 miles Northeast	UWC CT Sand & Stone Well	Farmington	1,588	1 overburden well
2.75 miles West	BWD Mix Street Wells	Bristol	10,000	3 overburden wells
3.0 miles North	Lakeview Apartments	Farmington	642	Unknown
3.2 miles Southeast	Tilcon (Angelo Tomasso, Inc.)	New Britain	26	2 bedrock wells
3.55 miles South	Ciccio Court	Plainville	80	Unknown
3.85 miles South	Apple Valley Village Apartments	Southington	70	Unknown

Table 5

Public Groundwater Supply Sources within 4-Radial Miles of J.F. Fredericks Tool Company (Concluded)

Distance/ Direction from Site	Source Name	Location of Source[a]	Estimated Population Served	Source Type[b]
4.0 miles Northwest	Charles House Wells (1-5)	Farmington	7,940	5 overburden wells

[a] Indicates Town in which well is located.
[b] Overburden, Bedrock, or Unknown.
*FIP well Nos. 1 and 2 are used for emergency purposes only.
CT = Connecticut
UWC = Unionville Water Company
FIP = Farmington Industrial Park
BWD = Bristol Water Department
NBWD = New Britain Water Department
PWC = Plainville Water Company

[18; 21; 22; 23; 26; 27; 28; 29; 30; 31; 32; 33; 34; 35; 36; 37; 38; 39; 40; 67; 73; 74; 75; 76; 77; 78; 79]

The nearest verified private drinking water well to the property is located approximately 1.2 miles north-northwest of the Fredericks property at the junction of Plainville Avenue and Meadow Road in Farmington, and serves an estimated three people [18; 53]. The estimated population served by private groundwater sources within 4-radial miles of the property is 7,883 [11].

The number of persons who rely on private groundwater supplies within 4-radial miles of the FIP was reported by CENTRACTS, which estimates groundwater populations using equal distribution calculations of U.S. Census data identifying population, households, and private water wells for "Block Groups" that lie wholly or in part within individual radial distance rings measured from potential sources on the subject property [11]. Because the CENTRACTS report estimates private well use in each block and no private wells have been identified less than 1.2 miles from the property, the populations attributed to the 0- to 0.25-, the 0.25- to 0.5-, and the 0.5- to 1.0-mile rings in the CENTRACTS report have been shifted to the 1.0- to 2.0-mile distance ring.

Table 6 summarizes public and private well users served by groundwater sources within 4-radial miles of the Fredericks property [5; 11; 18, pp. 35, 36, 50, 51; 21; 53].

Table 6

Estimated Drinking Water Populations Served by Groundwater Sources within 4-Radial Miles of J.F. Fredericks Tool Company

Radial Distance from J.F. Fredericks Tool Co. (miles)	Estimated Population Served by Private Wells	Estimated Population Served by Public Wells	Total Estimated Population Served by Groundwater Sources within the Ring
0.00 ≤ 0.25	0	1,588	1,588
0.25 ≤ 0.50	0	0	0
0.50 ≤ 1.00	0	6,524	6,524
1.00 ≤ 2.00	1,490	92	1,582
2.00 ≤ 3.00	2,978	63,690	66,668
3.00 ≤ 4.00	3,415	8,758	12,173
TOTAL	**7,883**	**80,652**	**88,535**

According to State file information, the Connecticut Department of Health Services (CT DHS) initially collected and analyzed samples from the four FIP wells and Johnson Avenue Well No. 3 in June 1975. Available records indicated that Johnson Avenue Well No. 6 was first sampled in June 1982. Analytical results from the June 1975 sampling round of the four FIP wells and Johnson Avenue Well No. 3 indicated the presence of several volatile organic compounds (VOCs) at concentrations ranging from 20 to 1,000 parts per billion (ppb). The compounds present at the highest concentrations from the June 1975 sampling round included 1,1,1-TCA at 1,000 ppb, chloroform at 680 ppb, perchloroethylene (PCE) at 640 ppb, and trichloroethylene (TCE) at 430 ppb. The highest concentrations of 1,1,1-TCA, TCE, and chloroform were noted in samples collected from Johnson Avenue Well No. 3, and the highest concentration of PCE was detected in the sample collected from FIP Well No. 4 [1; 6].

Groundwater samples have been collected by CT DHS and WESTON from the five affected wells intermittently from 1975 to the present; sampling of Johnson Avenue Well No. 6 began in 1982 [33, p. 6]. The concentration of chlorinated organics in the wells has generally decreased since their discovery in 1975, but was still present as of the latest round of sampling [26; 27; 33, Attachment B] (12 July 1995).

Table 7 summarizes the historical results of sampling of the FIP and Johnson Avenue wells [1; 24; 25; 49; 51]. The first data column notes the highest concentration of the substance and the sampling date. The second data column records the most recently detected concentration, prior to the 12 July 1995 groundwater sampling event (which will be discussed in the following section of this report). The third data column provides the Maximum Contaminant Level (MCL), the EPA recommended maximum levels for these substances in drinking water.

Table 7

Summary of Substances Detected in Drinking Water Wells in the Vicinity of the Farmington Industrial Park

Well	Substance	Highest Concentration/Date (ppb)		Most Recent Concentration/Date (ppb)		EPA MCL (ppb)
FIP No. 1	Chloroform	20	6/2/75	NS	3/28/88	100
	1,1,1-TCA	63	3/28/88	63	3/28/88	200
	TCE	200	6/2/75	4.6	3/28/88	5
	PCE	3.8	3/28/88	3.8	3/28/88	5
FIP No. 2	Chloroform	60	6/2/75	NS	3/31/88	100
	1,1,1-TCA	2.1	3/31/88	2.1	3/31/88	200
	TCE	85	6/2/75	3.2	3/31/88	5
	PCE	160	6/2/75	14	3/31/88	5
FIP No. 3	Chloroform	97	6/2/75	ND	1/11/95	100
	1,1,1-TCA	46 *	3/20/80	4.1	1/11/95	200
	TCE	36	6/2/75	0.86	1/11/95	5
	PCE	73	6/2/75	1.2	1/11/95	5
FIP No. 4	Chloroform	77	6/2/75	ND	10/28/94	100
	1,1,1-TCA	25 *	2/29/80	4.9	10/28/94	200
	TCE	53	6/2/75	0.95	10/28/94	5
	PCE	640	6/2/75	1.5	10/28/94	5
Johnson Avenue Well No. 3	Chloroform	680	6/2/75	ND	1/17/95	100
	1,1,1-TCA	1,000	6/20/75	19.7	1/17/95	200
	TCE	900	7/22/75	4.9	1/17/95	5
	PCE	60	6/2/75	14.0	1/17/95	5

Table 7

Summary of Substances Detected in Drinking Water Wells in the Vicinity of the Farmington Industrial Park (Concluded)

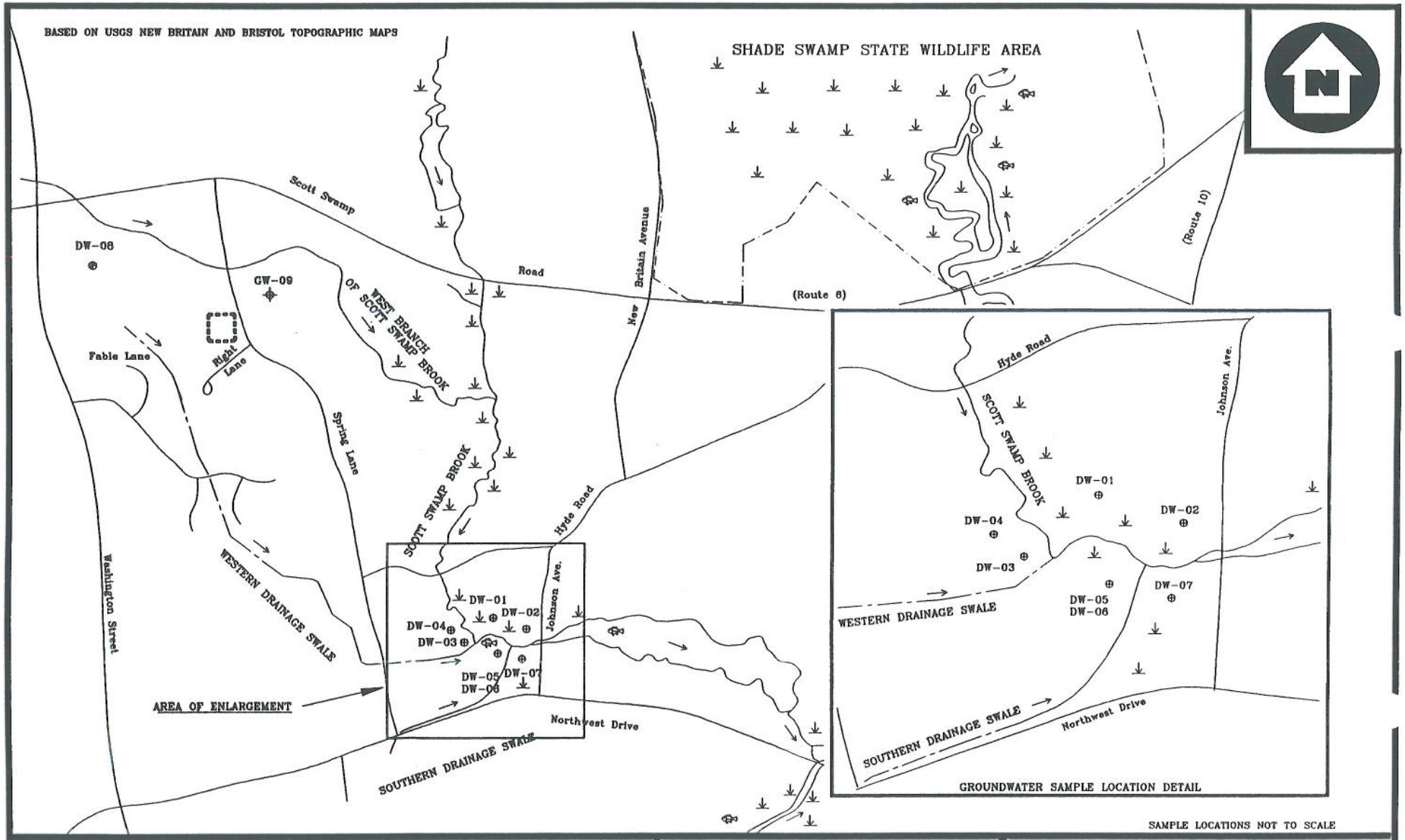
Well	Substance	Highest Concentration/Date (ppb)		Most Recent Concentration/Date (ppb)		EPA MCL (ppb)
Johnson Avenue Well No. 6	Chloroform	NS	7/24/90	ND	1/17/95	100
	1,1,1-TCA	12.8	4/19/88	3.5	1/17/95	200
	TCE	53.5	7/24/90	21.0	1/17/95	5
	PCE	6.4	7/24/90	3.1	1/17/95	5

ND = Not Detected.
NS = Not Sampled/Analyzed during most recent sampling round.
* = A higher concentration of 1,1,1-TCA, 101 ppb, was detected in a composite sample of water from FIP Well Nos. 3 and 4 on 3 October 1983.
MCL = EPA Maximum Contaminant Level (June 1996).
ppb = Parts per billion.
1,1,1-TCA = 1,1,1-trichloroethane.
TCE = trichloroethylene.
PCE = perchloroethylene.
FIP = Farmington Industrial Park.

[1; 24; 25; 49; 51]

On 12 July 1995, WESTON collected nine groundwater and drinking water samples in the vicinity of the FIP (Figure 4) [53]. The groundwater sample (GW-09) and the drinking water samples (DW-01 through DW-08) were submitted through the EPA Contract Laboratory Program (CLP) for VOC, semivolatile organic compounds (SVOC), pesticide/polychlorinated biphenyls (PCB), total metals, and cyanide analyses. The VOC fraction of the samples was analyzed by EPA Method 524.2 by the EPA New England Regional Laboratory [53, pp. 39-40].

Groundwater sample GW-09, collected from the New England Aircraft Plant No. 1 property located at 55 Spring Lane, was selected as a reference sample because it is located upgradient of potential sources of groundwater contamination identified within the vicinity of the FIP [48; 71]. None of the groundwater or drinking water samples collected by WESTON were filtered prior to collection. Groundwater samples collected by WESTON appeared clear and free of visible solids [53]. Figure 4 depicts the groundwater and drinking water sample locations [53, pp. 39-40].



GROUNDWATER SAMPLE LOCATION MAP

J.F. FREDERICKS TOOL COMPANY

FARMINGTON INDUSTRIAL PARK PROPERTIES

FARMINGTON/PLAINVILLE, CONNECTICUT

WESTON® MANAGERS DESIGNERS/CONSULTANTS

REGION I SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

TDD #	DRAWN BY:	DATE
97-04-0023	E. FITZPATRICK	9/22/97

FILE NAME: S:\97040023\FRED4.DWG

FIGURE 4

S:\97040023\FRED.FNL

1 April 1998

Table 8 summarizes groundwater and drinking water samples collected during the WESTON FIP sampling event.

Table 8

Groundwater and Drinking Water Sample Summary: Samples Collected by WESTON on 12 July 1995

Sample Location No.	Traffic Report No.	Time	Remarks	Sample Source
MATRIX: AQUEOUS				
DW-01	DAR73 AHF21 MAGL38	1015	Grab	Drinking water sample collected from FIP Well No. 1.
DW-02	DAR74 AHF22 MAGL39	1115	Grab	Drinking water sample collected from FIP Well No. 2.
DW-03	DAR75 AHF23 MAGL40	0945	Grab	Drinking water sample collected from FIP Well No. 3.
DW-04	DAR76 AHF24 MAGL41	1005	Grab	Drinking water sample collected from FIP Well No. 4.
DW-05	DAR77 AHF25 MAGL42	1400	Grab	Drinking water sample collected from Johnson Avenue Well No. 6.
DW-06	DAR78 AHF26 MAGL43	1400	Grab	Duplicate of sample DW-05 collected for quality control.
DW-07	DAR79 AHF27 MAGL44	1415	Grab	Drinking water sample collected from Johnson Avenue Well No. 3.
DW-08	DAR80 AHF28 MAGL45	0915	Grab	Drinking water sample collected from the UWC Wells Acres Well.
GW-09	DAR81 AHF29 MAGL46	1255	Grab	Groundwater sample collected from monitoring well MW-01 on the New England Aircraft Plant No. 1 property, as a reference sample.
TB-02	DAR83	0855	Grab	Trip Blank sample collected for quality control.
RB-02	DAR82 AHF33 MAGL50	0900	Grab	Rinsate Blank sample collected for quality control.

FIP = Farmington Industrial Park
UWC = Unionville Water Company

Table 9 is a summary of organic compounds and inorganic elements detected through CLP analyses of WESTON drinking water samples collected on 12 July 1995 [34; 41; 51; 53]. For each sample location, a compound or element is listed if it was detected at three times greater than the reference sample concentration (GW-09). However, if the compound or element was not detected in the reference sample, the reference sample quantitation limit (SQL) (for organic analyses) or sample detection limit (SDL) (for inorganic analyses) is used as the reference value. These compounds or elements are listed if they occurred at a value equal to or greater than the reference sample's SQL or SDL and are designated by their approximate relative concentration above these values.

Table 9

**Summary of Analytical Results,
Drinking Water Sample Analysis:
Samples Collected by WESTON on 12 July 1995**

Sample Location	Compound/Element	Concentration	Reference Concentration	Comments
DW-01 DAR73 AHF21 MAGL38	**VOCs**			
	1,1,1-TCA	31 µg/L	2 U µg/L	15.50 × SQL
	TCE	4.2 µg/L	2 U µg/L	2.10 × SQL
	SVOCs			
	Naphthalene	2.4 µg/L	2 U µg/L	1.20 × SQL
DW-02 DAR74 AHF22 MAGL39	**VOCs**			
	1,1-DCE	2.1 µg/L	2 U µg/L	1.05 × SQL
	1,1,1-TCA	16 µg/L	2 U µg/L	8.00 × SQL
	TCE	4.9 µg/L	2 U µg/L	2.45 × SQL
	cis-1,2-DCE	6.6 µg/L	2 U µg/L	3.30 × SQL
	PCE	25 µg/L *	2 U µg/L	12.50 × SQL
DW-03 DAR75 AHF23 MAGL40	**VOCs**			
	1,1,1-TCA	4.9 µg/L	2 U µg/L	2.45 × SQL
DW-04 DAR76 AHF24 MAGL41	**VOCs**			
	cis-1,2-DCE	10 µg/L	2 U µg/L	5.00 × SQL
	PCE	2.7 µg/L	2 U µg/L	1.35 × SQL
DW-05 DAR77 AHF25 MAGL42	**VOCs**			
	TCE	13 µg/L *	2 U µg/L	6.50 × SQL
	cis-1,2-DCE	5.6 µg/L	2 U µg/L	2.80 × SQL
	1,2,3-Trichlorobenzene	2 µg/L	2 U µg/L	1.00 × SQL

Table 9

Summary of Analytical Results, Drinking Water Sample Analysis: Samples Collected by WESTON on 12 July 1995 (Concluded)

Sample Location	Compound/Element	Concentration	Reference Concentration	Comments
DW-05 (concl.)	**SVOCs**			
	Naphthalene	4.3 µg/L	2 U µg/L	2.15 × SQL
DW-06 DAR78 AHF26 MAGL43	**VOCs**			
	TCE	13 µg/L *	2 U µg/L	6.50 × SQL
	cis-1,2-DCE	5.6 µg/L	2 U µg/L	2.80 × SQL
DW-07 DAR79 AHF27 MAGL44	**VOCs**			
	1,1,1-TCA	10 µg/L	2 U µg/L	5.00 × SQL
	TCE	2.7 µg/L	2 U µg/L	1.35 × SQL
	cis-1,2-DCE	2.3 µg/L	2 U µg/L	1.15 × SQL
	PCE	7.4 µg/L *	2 U µg/L	3.70 × SQL

U = The compound was analyzed for; but, it was not detected. The associated numerical value is the SQL.
* = Concentration exceeds the Maximum Contaminant Level (MCL).
µg/L = micrograms per liter.
SDL = Sample Detection Limit.
SQL = Sample Quantitation Limit.
TCE = trichloroethylene.
PCE = perchloroethylene.
1,1,1-TCA = 1,1,1-trichloroethane.
1,1-DCE = 1,1-dichloroethylene.
cis-1,2-DCE = cis-1,2-dichloroethylene.
VOCs = volatile organic compounds.
SVOCs = semivolatile organic compounds.

Several VOCs were detected at elevated concentrations in the drinking water samples submitted for analysis ranging from 1.0 to 15.5 times the SQL. The following VOCs were detected at concentrations that exceeded the EPA drinking water MCL: PCE at 25 and 7.4 micrograms per liter (µg/L) in DW-02 and DW-07, respectively; and TCE at 13 µg/L in DW-05 and DW-06.

The SVOC, naphthalene, was also detected at levels between 1.2 and 2.15 times the SQL. Naphthalene is a component of petroleum fractions and may be considered a constituent of waste oils, cutting oils, and lubricating oils.

No pesticide/PCBs or inorganic elements were detected in any of the WESTON drinking water samples collected on 12 July 1995.

1,1,1-TCA may degrade in soils and groundwater to 1,1-dichloroethylene (1,1-DCE), 1,1-dichloroethane (1,1-DCA), cis-1,2-dichloroethylene (cis-1,2-DCE), chloroethane, vinyl chloride, and acetic acid [56; 57]. The degradation of 1,1,1-TCA to the substances mentioned above may explain the presence of 1,1-DCE and cis-1,2-DCE in the drinking water wells sampled at the FIP. 1,2,3-Trichlorobenzene, PCE, and TCE were also detected in groundwater samples collected on 12 July 1995; however, since Fredericks has never reportedly used these substances, they will not be considered attributable to the Fredericks property.

SURFACE WATER PATHWAY

The Fredericks property slopes gradually from the northwest to the southeast [3; 4; 6]. There are no stormwater catchbasins located on the Fredericks property [3]. Generally, surface water runoff is directed to the southeast toward the West Branch of Scott Swamp Brook. The probable point of entry (PPE) is located on the West Branch of the Scott Swamp Brook, approximately 600 feet east of the Fredericks boundary [4].

The West Branch of the Scott Swamp Brook continues approximately 0.5 miles and discharges into Scott Swamp Brook, which then flows approximately 1.2 miles southeast to the Pequabuck River. The Pequabuck River flows approximately 2.6 miles north through the Shade Swamp State Wildlife Area and ultimately discharges to the Farmington River [59]. The terminus of the 15-mile downstream pathway is located in the vicinity of the Route 315 bridge, which crosses the Farmington River in Simsbury, Connecticut (Figure 5) [59]. The surface water quality is listed as Class B/A. Class B/A designated uses include recreation, fish and wildlife habitat, and agricultural and industrial supply. Table 10 summarizes the characteristics of water bodies within 15-downstream miles of the Fredericks property [35; 36; 37; 38; 43; 44; 45; 46; 47; 52; 59; 72].

Table 10

Water Bodies Along the 15-Mile Downstream Pathway from J.F. Fredericks Tool Company

Surface Water Body	Descriptor[a]	Length of Reach (miles)	Flow Characteristics (cfs)[b]	Length of Wetlands (miles)
West Branch of Scott Swamp Brook	Minimal stream	0.5	< 7.2	0.0
Scott Swamp Brook	Minimal stream	1.2	< 7.2	0.2
Pequabuck River	Small to moderate stream	1.7	94.0 to 100	1.2
Pequabuck River	Moderate to large stream	0.9	100 to 103	1.2

Table 10

Water Bodies Along the 15-Mile Downstream Pathway from J.F. Fredericks Tool Company (Concluded)

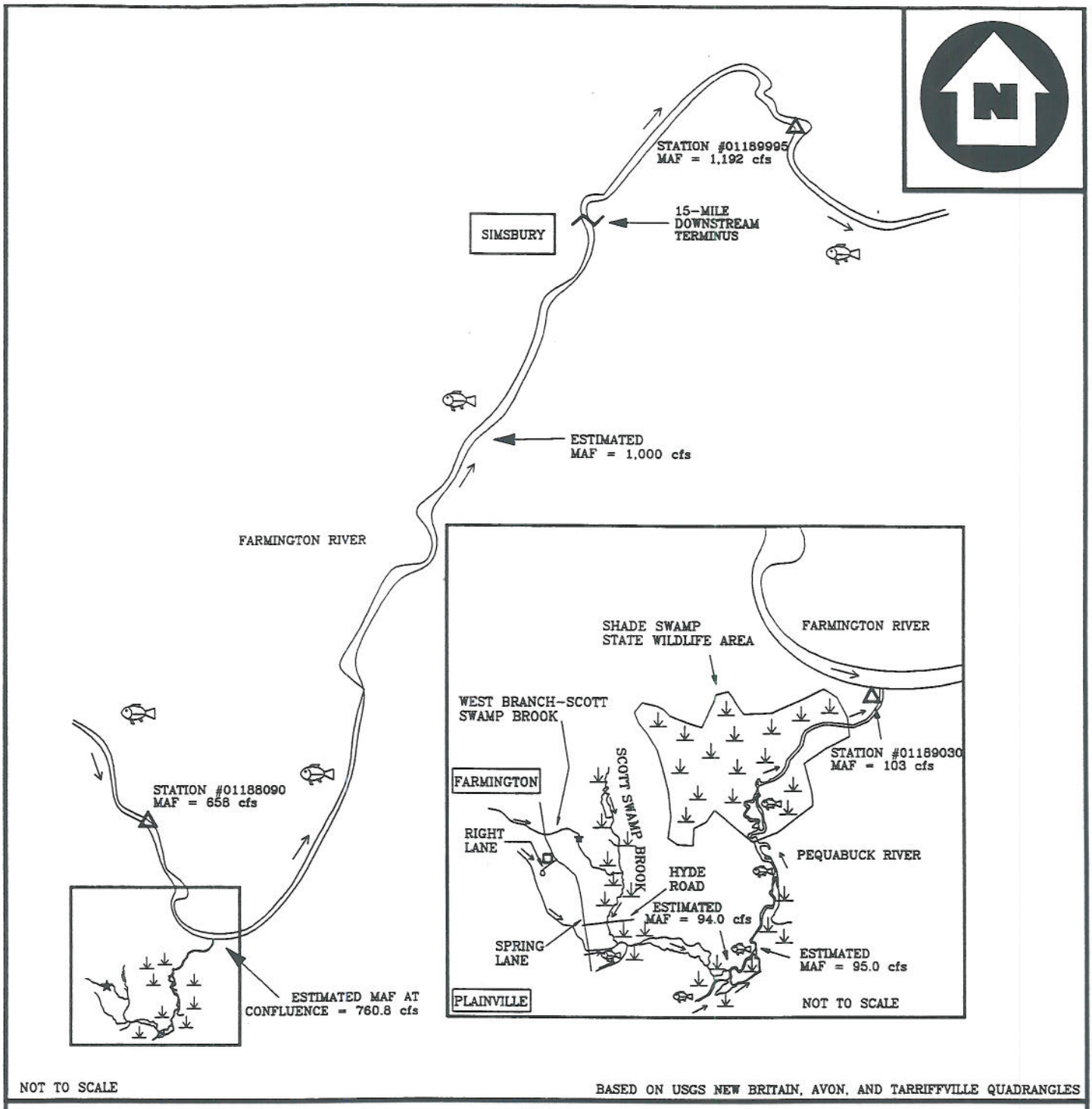
Surface Water Body	Descriptor [a]	Length of Reach (miles)	Flow Characteristics (cfs)[b]	Length of Wetlands (miles)
Farmington River	Moderate to large stream	9.2	761 to 1,000	0.1
Farmington River	Large stream to river	1.5	1,000 to 1,080	-

[a] Minimal stream <10 cfs. Small to moderate stream 10-100 cfs. Moderate to large stream >100-1,000 cfs. Large stream to river >1,000-10,000 cfs. Large river >10,000-100,000 cfs. Very large river >100,000 cfs. Coastal tidal waters (flow not applicable). Shallow ocean zone or Great Lake (flow not applicable). Moderate depth ocean zone or Great Lake (flow not applicable). Deep ocean zone or Great Lake (flow not applicable). Three-mile mixing zone in quiet flowing river 10 cfs or greater.

[b] Flow rates are reported in cubic feet per second and were estimated using available U.S. Geological Survey gaging station information and from observations and field measurements made by WESTON.

No known drinking water intakes are located along the 15-mile downstream pathway for the Fredericks property [18, p. 51; 42; 47; 59]. Scott Swamp Brook (downstream of Hyde Road in Farmington, Connecticut) and the Pequabuck River are considered the nearest fisheries, although neither water body is stocked (Figure 5) [18, p. 14-15; 42; 60]. The Farmington River is one of Connecticut's premier trout fisheries. It is stocked by the State of Connecticut with trout and Atlantic Salmon at locations upstream and downstream of Farmington. The segment of the Farmington River downstream of the Fredericks property is classified as a warm-water fishery by CT DEP, which is currently attempting to restore Atlantic Salmon to the river [60]. No known fisheries downstream of the Fredericks property have been closed.

At the time of this report, CT DEP was unable to provide a comprehensive listing for threatened and endangered species data for the 15-mile downstream pathway; therefore, it is unknown how many threatened and endangered species exist along the pathway [54; 55; 58]. However, the Shade Swamp State Wildlife Area, an extensive alluvial swamp located along the Pequabuck River approximately 1.5 to 2.3 miles downstream from the Fredericks property, is noted by the CT DEP as containing sensitive environments (Figure 5) [54; 55]. According to wetland inventory maps, the nearest wetland is located along Scott Swamp Brook approximately 0.5 miles downstream of the PPE where the West Branch of Scott Swamp Brook discharges to Scott Swamp Brook [36]. Table 11 summarizes the known sensitive environments located along the 15-mile downstream pathway of the Fredericks property [52; 54; 55; 58].



NOT TO SCALE

BASED ON USGS NEW BRITAIN, AVON, AND TARRIFFVILLE QUADRANGLES

LEGEND

- ★ PPE TO SURFACE WATER
- FISHERY
- △ USGS GAUGING STATION
- MAF MEAN ANNUAL FLOW
- RIVER/STREAM
- MANMADE STREAM/SWALE
- □ J.F. FREDERICKS TOOL COMPANY
- WETLANDS
- FLOW DIRECTION

SURFACE WATER PATHWAY

J.F. FREDERICKS TOOL COMPANY
25 SPRING LANE
FARMINGTON, CONNECTICUT

WESTON® MANAGERS DESIGNERS/CONSULTANTS

REGION I SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

TDD #	DRAWN BY:	DATE
97-04-0023	E. FITZPATRICK	9/22/97

FILE NAME: S:\97040023\FRED5.DWG

FIGURE 5

Table 11

Sensitive Environments Located Along the 15-Mile Downstream Pathway from J.F. Fredericks Tool Company

Sensitive Environment Name	Sensitive Environment Type	Water Body	Downstream Distance from PPE (miles)	Flow Rate at Environment
West branch of Scott Swamp Brook	Clean Water Act	West branch of Scott Swamp Brook	0	< 7.2 cfs
Wetlands	Wetlands (0.2 miles)	Scott Swamp Brook	0.5 to 1.7	< 7.2 cfs
Wetlands	Wetlands (1.2 miles)	Pequabuck River	1.7 to 3.4	94 to 100 cfs
Shade Swamp State Wildlife Area	State Wildlife Management Area	Pequabuck River	2.5	94 to 100 cfs
Sandplain Gerardia (*Agalinis acuta*)	State-endangered species	Pequabuck River	2.5	94 to 100 cfs
New England Grape (*Vitis novae-angliae*)	State species of Special Concern	Pequabuck River	2.5	94 to 100 cfs
Wetlands	Wetlands (1.2 miles)	Pequabuck River	3.4 to 4.3	100 to 103 cfs
Wetlands	Wetlands (0.1 miles)	Farmington River	4.3 to 13.5	761 to 1,000 cfs

PPE = Probable Point of Entry

[52; 54; 55; 58]

No surface water or sediment sampling associated with the Fredericks property has been conducted to date. However, surface water and sediment sampling to evaluate the FIP as a whole has been conducted on several occasions and is discussed in the following paragraphs.

FIP Evaluation

Several FIP properties reportedly disposed of large amounts of wastewater or non-contact cooling water directly to Scott Swamp Brook, its tributaries, or drainage systems which lead to Scott Swamp Brook.

Between December 1986 and March 1987, CT DEP collected 21 surface water samples from the West Branch of Scott Swamp Brook [1]. The CT DEP samples were analyzed for VOCs; however, the exact analytical method used could not be determined from available file information, and no known reference or Quality Assurance/Quality Control (QA/QC) samples

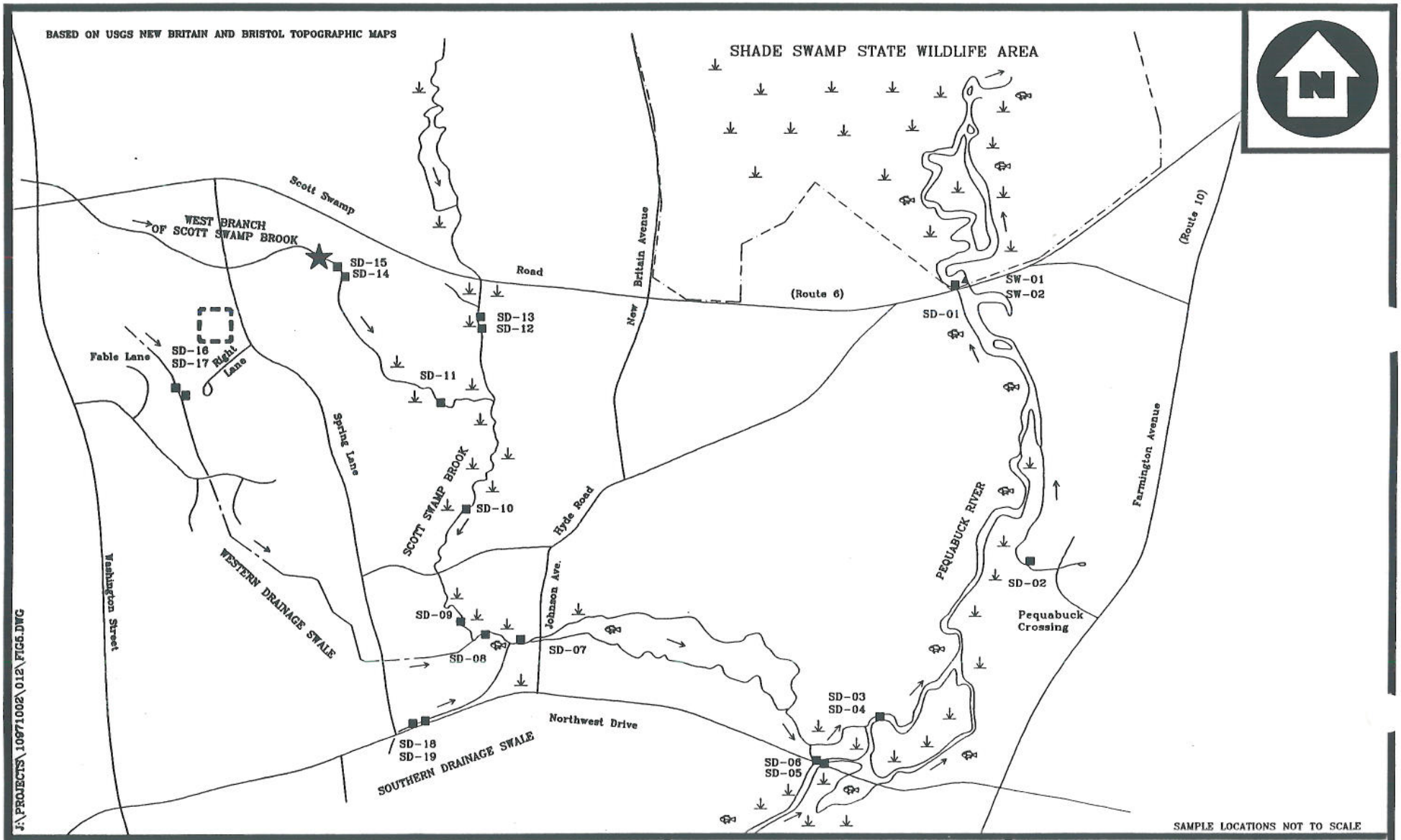
were collected. Eight VOCs were detected in surface water samples, ranging in concentration from 1 μg/L (TCE) to 300 μg/L (PCE) [1].

In July 1987, TRC Environmental Consultants, Inc. (TRC) collected four surface water samples from the West Branch of Scott Swamp Brook, including reference and duplicate samples [62]. Exact sample locations are unknown and, therefore, are not shown in Figure 6. The surface water samples were analyzed for VOCs using EPA Method 601. Analytical results indicated elevated concentrations of seven VOCs. The seven substances ranged from 1.7 to 38.5 times either the laboratory detection limit (LDL) or the reference sample concentration [62].

Substances with elevated concentrations are as follows: 1,1,1-TCA (34.5 times the LDL); TCE (18 times the LDL); 1,2-DCA (1.7 times the LDL); 1,1-DCA (10.5 times the LDL); 1,1-DCE (15.3 times the LDL); trans-1,2-dichloroethylene (30 times the LDL); PCE (38.5 times the reference sample concentration) [62].

In June and August 1990, HRP Associates, Inc. (HRP) collected twelve surface water samples from the West Branch of Scott Swamp Brook. Sample locations are unknown and, therefore, not shown in Figure 6. The samples were analyzed for VOCs using EPA Method 601/8010. Analytical results indicated that all but two samples (SW-1 and SW-2) exhibited elevated concentrations of PCE, TCE, and 1,1,1-TCA ranging from 1 ppb (TCE) to 109,132 ppb (PCE) [61]. Surface water samples SW-1 and SW-2 were reportedly collected as upstream reference samples [61].

On 12 July 1995, WESTON collected two surface water and 21 sediment samples, including trip blank and equipment blank samples, from the vicinity of the FIP to evaluate the surface water pathway. Sampling locations were selected based on the location of each property within the FIP, and to document, when possible, actual contamination from individual properties to the surface water pathway, including target fisheries and sensitive environments. Samples were submitted through the EPA CLP for VOC, SVOC, pesticide/PCB, total metals, and cyanide analyses [53, pp. 39-40]. Figure 6 depicts WESTON sample locations [53, pp. 39-40].



LEGEND

- STATE WILDLIFE AREA PROPERTY LINE
- WETLAND
- SEDIMENT SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- PPE TO SURFACE WATER
- MANMADE STREAM/SWALE
- STREAM/RIVER
- FISHERY
- J.F. FREDERICKS TOOL COMPANY

SURFACE WATER AND SEDIMENT SAMPLE LOCATION MAP

J.F. FREDERICKS TOOL COMPANY

FARMINGTON INDUSTRIAL PARK PROPERTIES

FARMINGTON/PLAINVILLE, CONNECTICUT

WESTON® MANAGERS DESIGNERS/CONSULTANTS

REGION I SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

TDD #	DRAWN BY:	DATE
97-04-0023	E. FITZPATRICK	9/22/97

FILE NAME: S:\97040023\FRED6.DWG

FIGURE 6

S:\97040023\FRED.FNL

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1 April 1998

Table 12 summarizes sediment and surface water samples collected by WESTON on 12 July 1995 from the vicinity of the FIP to evaluate the surface water pathway [53].

Table 12

**Sediment and Surface Water Sample Summary:
Farmington Industrial Park Properties,
Samples Collected by WESTON on 12 July 1995**

Sample Location No.	Traffic Report No.	Time	Remarks	Sample Source
MATRIX: SEDIMENT				
SD-01	AHF02 MAGL19	0900	Grab (0 to 8 in.)	Sediment sample collected from the Shade Swamp Wildlife Area, 100 yards north of the Scott Swamp Road bridge over the Pequabuck River.
SD-02	AHF03 MAGL20	0925	Grab (0 to 8 in.)	Sediment sample collected to document potential contamination entering the Pequabuck River via an unnamed stream near Pequabuck Crossing.
SD-03	AHF04 MAGL21	0915	Grab (0 to 6 in.)	Sediment sample collected from the downstream discharge point from Scott Swamp Brook to the Pequabuck River (MS/MSD).
SD-04	AHF05 MAGL22	0915	Grab (0 to 6 in.)	Duplicate of sample SD-03 collected for quality control.
SD-05	AHF06 MAGL23	1000	Grab (0 to 6 in.)	Sediment sample collected upstream of the confluence of Scott Swamp Brook and the Pequabuck River, immediately downstream of the Northwest Drive bridge over the Pequabuck River.
SD-06	AHF07 MAGL24	1005	Grab (0 to 6 in.)	Sediment sample collected upstream of the confluence of Scott Swamp Brook and the Pequabuck River, immediately downstream of the Northwest Drive bridge over the Pequabuck River.
SD-07	AHF08 MAGL25	1025	Grab (0 to 8 in.)	Sediment sample collected from wetlands along Scott Swamp Brook, downstream of its confluence with the southern drainage swale.

Table 12

Sediment and Surface Water Sample Summary: Farmington Industrial Park Properties, Samples Collected by WESTON on 12 July 1995 (Continued)

Sample Location No.	Traffic Report No.	Time	Remarks	Sample Source
SD-08	AHF09 MAGL26	1115	Grab (0 to 8 in.)	Sediment sample collected from wetlands along Scott Swamp Brook, downstream of its confluence with the western drainage swale.
SD-09	AHF10 MAGL27	1137	Grab (0 to 6 in.)	Sediment sample collected from wetlands along Scott Swamp Brook, approximately 450 feet upstream of location SD-08.
SD-10	AHF11 MAGL28	1135	Grab (0 to 6 in.)	Sediment sample collected from wetlands along Scott Swamp Brook, downstream of its confluence with the west branch of Scott Swamp Brook, due west of the northern edge of the EBM Manufacturing building.
SD-11	AHF12 MAGL29	1220	Grab (0 to 6 in.)	Sediment sample collected from wetlands along the west branch of Scott Swamp Brook, at the point where overland runoff from the Connecticut Spring and Stamping property enters the brook.
SD-12	AHF13 MAGL30	1300	Grab (0 to 6 in.)	Sediment sample collected from wetlands along Scott Swamp Brook, downstream of its confluence with a small tributary, 20 feet south of sample SD-13.
SD-13	AHF14 MAGL31	1310	Grab (0 to 6 in.)	Sediment sample collected from wetlands along Scott Swamp Brook, downstream of its confluence with a small tributary.
SD-14	AHF15 MAGL32	1420	Grab (0 to 6 in.)	Sediment sample collected from the west branch of Scott Swamp Brook, 50 feet upstream of the point where overland runoff from the New England Aircraft Plant No. 1 property enters the brook.

Table 12

Sediment and Surface Water Sample Summary: Farmington Industrial Park Properties, Samples Collected by WESTON on 12 July 1995 (Concluded)

Sample Location No.	Traffic Report No.	Time	Remarks	Sample Source
SD-15	AHF16 MAGL33	1430	Grab (0 to 6 in.)	Sediment sample collected from the west branch of Scott Swamp Brook, 75 feet upstream of the point where overland runoff from the New England Aircraft Plant No. 1 property enters the brook.
SD-16	AHF17 MAGL34	1432	Grab (6 to 8 in.)	Sediment sample collected from the western drainage swale, behind the residence at 8 Fable Lane.
SD-17	AHF18 MAGL35	1440	Grab (6 to 8 in.)	Sediment sample collected from the western drainage swale, behind the residence at 6 Fable Lane.
SD-18	AHF19 MAGL36	1241	Grab (6 to 8 in.)	Sediment sample collected from the southern drainage swale, 125 feet east of the intersection of Spring Lane and Northwest Drive.
SD-19	AHF20 MAGL37	1251	Grab (6 to 8 in.)	Sediment sample collected from the southern drainage swale, 175 feet east of the intersection of Spring Lane and Northwest Drive.
MATRIX: AQUEOUS				
SW-01	AHF30 MAGL47	0850	Grab	Surface water sample collected from the Pequabuck River in the Shade Swamp Wildlife Area, 100 yards north of the Scott Swamp Road bridge.
SW-02	AHF31 MAGL48	0850	Grab	Duplicate of sample SW-01 collected for quality control.
TB-01	AHF34	0850	Grab	Trip blank sample collected for quality control.
RB-01	AHF32 MAGL50	0920	Grab	Rinsate blank sample collected for quality control.

MS/MSD = Matrix Spike/Matrix Spike Duplicate.

The following eight sediment samples were collected along the surface water pathway to evaluate observed releases and actual contamination targets which may be attributable to properties that are part of the FIP. Sample SD-01 was collected from the Shade Swamp Wildlife Area; SD-03/SD-04 were collected from the downstream discharge point from Scott Swamp Brook to the Pequabuck River; SD-07 was collected from the wetlands along Scott Swamp Brook downstream from its confluence with the FIP southern drainage swale; SD-08 was collected from the wetlands along Scott Swamp Brook downstream of its confluence with the western drainage swale; SD-09 was collected from the wetlands along Scott Swamp Brook, approximately 450 feet upstream of location SD-08; SD-10 was collected from wetlands along Scott Swamp Brook, downstream of its confluence with the West Branch of Scott Swamp Brook; SD-11 was collected from wetlands along the West Branch of Scott Swamp Brook [53].

Surface water samples SW-01 and SW-02 were collected within the Shade Swamp Wildlife Area to document the level of contamination within that sensitive environment. No other surface water samples were collected by WESTON. As previously stated, sediment sample SD-01 was also collected within Scott Swamp Brook, along with complete reference location samples documenting upstream concentrations. If sediment sample SD-01 reported observed release substances at the Shade Swamp Wildlife Area, the surface water samples would be used to determine if those substances exceeded applicable surface water quality benchmark values. Based on this rationale, no upstream reference surface water samples were collected [53].

During the WESTON FIP environmental sampling event, 11 reference sediment samples were collected to determine reference conditions for the area in the vicinity of the FIP. The reference sample locations were selected based on their upstream location from potential targets (Figure 6). Due to the variable concentrations of inorganic elements occurring naturally in sediments, reference samples were generally collected in pairs. In addition, WESTON collected eight target sediment samples to evaluate whether releases to surface water had occurred to Scott Swamp Brook or to the Pequabuck River. Samples collected for QA/QC include replicate and duplicate samples, a rinsate blank sample, and a trip blank sample [53].

Table 13 summarizes sediment samples collected along the West Branch of Scott Swamp Brook, Scott Swamp Brook, and the Pequabuck River to evaluate observed releases and targets within these water bodies, and the corresponding reference samples used to establish reference concentrations upstream of the FIP.

Table 13

Reference Sample Locations for WESTON
12 July 1995 Sediment Sample

Sediment Sample No.	Spatial Location	Reference Sample Numbers
SD-01	Shade Swamp Wildlife Area; Pequabuck River	SD-02, SD-05, SD-06, SD-12, SD-13, SD-14, SD-15, SD-16, SD-17, SD-18, SD-19
SD-03/04	Wetlands; Pequabuck River	SD-05, SD-06, SD-12, SD-13, SD-14, SD-15, SD-16, SD-17, SD-18, SD-19
SD-07	Wetlands; Scott Swamp Brook	SD-12, SD-13, SD-14, SD-15, SD-16, SD-17, SD-18, SD-19
SD-08	Wetlands; Scott Swamp Brook	SD-12, SD-13, SD-14, SD-15, SD-16, SD-17
SD-09	Wetlands; Scott Swamp Brook	SD-12, SD-13, SD-14, SD-15
SD-10	Wetlands; Scott Swamp Brook	SD-12, SD-13, SD-14, SD-15
SD-11	Wetlands; West Branch of Scott Swamp Brook	SD-14, SD-15

Table 14 is a summary of organic compounds and inorganic elements detected through CLP analyses of WESTON sediment samples collected on 12 July 1995. For each sample location, a compound or element is listed if it was detected at three times greater than the appropriate reference sample concentration as described in the previous paragraphs. However, if the compound or element was not detected in the reference sample, the reference sample's SQL or SDL is used as the reference value. These compounds or elements are listed if they occurred at a value equal to or greater than the reference sample's SQL or SDL and are designated by their approximate relative concentration above these values [41].

Table 14

Summary of Analytical Results, Sediment Sample Analysis for Farmington Industrial Park Properties: Samples Collected by WESTON on 12 July 1995

Sample Location No.	Compound/Element	Concentration	Reference Concentration	Comments
SD-01 AHF02 MAGL19	**INORGANICS**			
	Chromium	159 mg/kg	42.6 mg/kg	3.7 × REF
SD-07 AHF08 MAGL25	**INORGANICS**			
	Selenium	0.84 mg/kg	0.81 U mg/kg	1.04 × SDL
SD-08 AHF09 MAGL26	**VOCs**			
	2-Butanone	90 µg/kg	15 U µg/kg	6.0 × SQL
	Toluene	29 µg/kg	15 U µg/kg	1.93 × SQL
	PESTICIDE/PCB			
	4,4'-DDD	28 J µg/kg	4.9 UJ µg/kg	5.7 × SQL
	INORGANICS			
	Chromium	611 mg/kg	20.7 mg/kg	29.5 × REF
	Copper	93.4 J mg/kg	7.6 UJ mg/kg	12.3 × SDL
	Selenium	17.9 mg/kg	0.81 U mg/kg	22.1 × SDL
	Zinc	265 mg/kg	26.7 mg/kg	9.9 × REF
SD-09 AHF10 MAGL26	**SVOCs**			
	Di-n-butylphthalate	570 J µg/kg	490 U µg/kg	1.2 × SQL
	Bis(2-ethylhexyl)phthalate	860 J µg/kg	490 U µg/kg	1.8 × SQL
	PESTICIDE/PCB			
	4,4'-DDE	11 J µg/kg	4.9 UJ µg/kg	2.2 × SQL
	4,4'-DDD	43 J µg/kg	4.9 UJ µg/kg	8.8 × SQL
	INORGANICS			
	Arsenic	5.2 mg/kg	2.5 U mg/kg	2.1 × SDL
	Cadmium	1.6 mg/kg	0.32 U mg/kg	5.0 × SDL
	Chromium	195 mg/kg	20.7 mg/kg	9.4 × REF
	Copper	50.6 J mg/kg	7.6 UJ mg/kg	6.7 × SDL

Table 14

Summary of Analytical Results, Sediment Sample Analysis for Farmington Industrial Park Properties: Samples Collected by WESTON on 12 July 1995 (Concluded)

Sample Location No.	Compound/Element	Concentration		Reference Concentration		Comments
SD-09 (concluded)	Lead	74.1	mg/kg	21.6	mg/kg	3.4 × REF
	Mercury	0.17	mg/kg	0.08	U mg/kg	2.1 × SDL
	Selenium	7.7	mg/kg	0.81	U mg/kg	9.5 × SDL
	Zinc	209	mg/kg	26.7	mg/kg	7.8 × REF
SD-11 AHF12 MAGL29	**VOCs**					
	TCE	17	µg/kg	12	µg/kg	1.4 × SQL
	PCE	65	µg/kg	12	µg/kg	5.4 × SQL

J = The value is an estimated quantity.
U = The compound was analyzed for; but was not detected. The value is the SQL.
UJ = The compound was analyzed for; but was not detected. The SQL is an estimated quantity.
REF = Reference Sample.
µg/kg = micrograms per kilogram.
VOCs = volatile organic compounds.
SVOCs = semivolatile organic compounds.
PCB = polychlorinated biphenyls.
SDL = Sample Detection Limit.
SQL = Sample Quantitation Limit.
mg/kg = milligrams per kilogram.

[20; 41; 49; 50; 58]

Table 15 is a summary of organic compounds and inorganic elements detected through CLP analyses of WESTON surface water samples [20; 41; 50; 70]. WESTON surface water sample results were compared with the Ambient Water Quality Criteria (AWQC) and the Ambient Aquatic Life Advisory Concentration (AALAC) benchmarks [20; 41; 50; 58].

Table 15

Summary of Analytical Results, Surface Water Sample Analysis for Farmington Industrial Park Properties: Samples Collected by WESTON on 12 July 1995

Sample Location No.	Compound/Element	Concentration (µg/L)	Benchmark Concentration (µg/L)	Comments
SW-01 AHF30 MAGL47	**INORGANICS**			
	Aluminum	472 J	--	NA
	Barium	39.1 J	--	NA
	Calcium	10,700 J	--	NA
	Iron	1,180 J	1,000	1.18 × BM
	Lead	10.1 J	3.2	3.16 × BM
	Magnesium	1,970 J	--	NA
	Manganese	134 J	--	NA
	Nickel	6.4 J	160	Below BM
	Potassium	3,330 J	--	NA
	Sodium	16,000 J	--	NA
SW-02 AHF31 MAGL48	**INORGANICS**			
	Aluminum	442 J	--	NA
	Barium	39.1 J	--	NA
	Calcium	10,800 J	--	NA
	Iron	1,120 J	1,000	1.12 × BM
	Lead	10.1 J	3.2	3.16 × BM
	Magnesium	2,000 J	--	NA
	Manganese	133 J	--	NA
	Nickel	8.3 J	160	Below BM
	Potassium	3,260 J	--	NA
	Sodium	16,000 J	--	NA

J = Quantitation is approximate due to limitations identified in the Quality Control Review.
BM = Ambient Water Quality Control (AWQC) and Ambient Aquatic Life Advisory Concentration (AALAC) Benchmark used as the ecological-based standard.
NA = Not Applicable.
-- = No AWQC/AALAC Benchmark is provided for this contaminant.

[20; 41; 49; 50; 58]

Four VOCs (2-butanone, toluene, TCE, and PCE) were detected between 1.4 and 6.0 times the SQL in sediment samples collected from wetlands along Scott Swamp Brook and the West Branch of Scott Swamp Brook. The detection of TCE and PCE in sediment sample SD-11 is consistent with past use of chlorinated solvents at the properties in the FIP and with substances detected in groundwater samples collected from public drinking water wells in the area. No other VOCs were detected in sediment samples collected by WESTON.

Two SVOCs, di-n-butylphthalate and bis(2-ethylhexyl)phthalate, were detected in sediment sample SD-09 at 1.2 and 1.8 times the SQL, respectively [41]. Sediment sample SD-09 was collected from the wetlands along Scott Swamp Brook, approximately 450 feet upstream of sediment sample location SD-08. The concentrations associated with the SVOCs detected in sample SD-09 were estimated. WESTON has included the detected concentrations of these SVOCs to remain consistent with technical directives provided by EPA Region I.

Two pesticides were also detected in WESTON sediment samples. However, since Fredericks did not use or store pesticides, they will not be considered attributable to the Fredericks property for the purposes of this Site Inspection (SI) [41; 53, pp. 14-15].

Eight inorganic elements were detected in WESTON sediment samples ranging between 1.04 times the SDL (selenium) and 29.5 times the reference concentration (chromium). Values associated with the inorganic element copper at sample locations SD-08 and SD-09 were estimated [50]. WESTON has included the detected concentrations of this inorganic element to remain consistent with technical directives provided by EPA Region I. No other substances were detected in WESTON sediment samples.

There were no elevated levels of VOCs, SVOCs, pesticides, or PCBs detected in surface water samples collected by WESTON on 12 July 1995. However, both SW-01 and SW-02 revealed elevated concentrations of ten inorganic elements. Of the ten inorganic elements detected, only two, iron and lead, exceeded environmental benchmarks. None of the inorganic elements detected in surface water samples SW-01 and SW-02 were detected in sediment sample SD-01 [41; 50; 58].

Surface water and sediment sampling has been conducted by a number of organizations. The details and results of these sampling rounds have been provided for informational purposes only. The sampling has been conducted with regard to the FIP as a whole, not in relation to individual properties within the FIP; therefore, it should not reflect specifically on the Fredericks property.

SOIL EXPOSURE PATHWAY

There are no on-site residents at the Fredericks property; however, approximately 99 full-time workers are currently employed at the property [3]. According to the Town of Farmington Tax Assessor's maps, the nearest residence to the Fredericks property is located at 10 Fable Lane, approximately 600 feet west of the property [4]. An estimated 2,650 people live within 1-radial mile of the Fredericks property [11]. In addition, there are approximately 1,000 workers within the FIP. No known terrestrial sensitive environments are located on the Fredericks property [3; 54; 55]. There are no schools or day-care centers within 200 feet of identified source areas on the property [3; 4]. Pedestrian and vehicular access to the Fredericks property is unrestricted [3].

Two soil samples were collected from the area near the building foundation and parking lot area during the UST excavation in 1995. Samples were analyzed by Northeast Laboratories, Inc. for petroleum hydrocarbons. Analytical results of the samples indicated that no petroleum hydrocarbons were detected above the detection limits (<1 mg/kg) [68; 71]. No other soil samples are known to have been collected at the Fredericks property.

AIR PATHWAY

No known air samples have been collected from the Fredericks property to date [3]. The nearest individuals to the subject property are the 99 full-time workers employed by Fredericks. According to the Town of Farmington Tax Assessor's maps, the nearest residence is located approximately 600 feet west of the Fredericks property at 10 Fable Lane [3; 4]. An estimated 86,826 people live within 4-radial miles of the Fredericks property [11]. This estimate does not include on-site workers or other workers in the FIP. Table 16 summarizes the residential population located within 4-radial miles of the Fredericks property.

Table 16

Estimated Population Within 4-Radial Miles of J.F. Fredericks Tool Company

Radial Distance From J.F. Fredericks Tool Company (miles)	Estimated Population
0.00 (On-site)	99*
0.00 < 0.25	164
0.25 < 0.50	499
0.50 < 1.00	2,987 ◆
1.00 < 2.00	16,509
2.00 < 3.00	29,014
3.00 < 4.00	38,653
TOTAL	87,925* ◆

* Total population value includes the 99 on-site workers.
◆ Population value includes 1,000 FIP workers.
References: [3; 11]

The nearest school, the Mountain View Elementary School in Bristol, Connecticut, is located approximately 1.35 miles southwest of the Fredericks property and has an enrollment of an estimated 328 students [3; 4; 70]. No known sensitive environments are located on the Fredericks property. However, there are 18 occurrences of State of Connecticut threatened/endangered species and 19 occurrences of State of Connecticut species of concern which utilize habitats within 4-radial miles of the Fredericks property [54; 55; 58]. In addition, there are approximately 1,307 acres of wetlands within 4-radial miles of the Fredericks property [43; 44; 45; 46; 52]. Table 17 summarizes sensitive environments within 4-radial miles of the Fredericks property.

Table 17

Sensitive Environments Located Within 4-Radial Miles of J.F. Fredericks Tool Company

Radial Distance from Fredericks (miles)	Sensitive Environment/Species (status)
0.00 < 0.25	Scott Swamp Brook (Clean Water Act area)
	Habitat for State concerned species *Hartford or climbing fern*
0.25 < 0.50	20 acres wetlands
	Habitat for State threatened/endangered species *Red-headed woodpecker* *Squirrel corn*
	Habitat for State concerned species *Green dragon*
0.50 < 1.00	47 acres of wetlands
	Habitat for State threatened/endangered species *Golden seal* — *Cooper's hawk* *Bog copper* — *Short-eared owl*
	Habitat for State concerned species *Long's bulrush* *Tall white bog orchid* *Panic grass*
1.00 < 2.00	696.5 acres of wetlands
2.00 < 3.00	280 acres of wetlands
	Habitat for State threatened/endangered species *Dwarf huckleberry* — *Arethusa* *Common moorhen* — *Upland sandpiper* *Bog copper* — *Puritan tiger beetle* *Red-headed woodpecker* — *Tidewater mucket* *Blue-winged teal*
	Habitat for State concerned species *Virginia waterleaf (2)* — *Puttyroot* *Green Dragon (2)*
3.00 < 4.00	263.5 acres of wetlands
	Habitat for State threatened/endangered species *Peregrine falcon* — *Grasshopper sparrow* *Five-lined skink*
	Habitat for State concerned species *American bittersweet* — *Virginia waterleaf* *Jefferson salamander* — *Nodding pogonia* *False hop sedge* — *Eastern pondmussel* *Dwarf rattlesnake plantain* — *Puttyroot* *Savannah sparrow*

[52; 58]

SUMMARY

The J.F. Fredericks Tool Company (Fredericks) property is located on 5 acres at 25 Spring Lane in the Farmington Industrial Park (FIP) in Farmington, Hartford County, Connecticut. A single-story building is located near the center of the property. Fredericks was established in 1968 as a light manufacturer of small aircraft parts and electrodes. The facility is currently owned by Mr. Roger J. Fredericks and employs approximately 99 full-time workers.

The manufacturing process consists of cutting, grinding, sanding, shaping, and cleaning. In the past, Fredericks used 1,1,1-trichloroethane (1,1,1-TCA) for degreasing; however, Fredericks no longer uses chlorinated solvents in their degreasing processes. A 3,000-gallon concrete underground storage tank (UST), located beneath the parking area on the north side of the building, was used to store waste oils between 1968 and 1994. According to a 1980 CT DEP report (Form P-5), the UST was used to hold waste oils and 1,1,1-TCA. In a 17 November 1997 letter, representatives of the Fredericks property state that the 1980 CT DEP report is in error, that the UST never stored waste solvents.

From 1984 until an unknown date prior to 1989, waste 1,1,1-TCA was stored in drums prior to off-site disposal. The UST was removed in 1995; the condition of the UST at that time is unknown. A septic system, located near the northwest side of the building, served Fredericks from 1968 to 1982, when Fredericks was connected to the municipal sewer system.

Fredericks currently recycles wastewater and waste oils for reuse in their manufacturing processes. When the wastewater and waste oils can no longer be recycled, they are stored in a designated hazardous materials storage area, along with the filtration sludges from the recycling processes, in two 250-gallon totes prior to off-site disposal. Scrap metal wastes are also stored in the hazardous materials storage area in drums prior to off-site disposal.

Groundwater is assumed to flow southeast at depths between 10 and 37 feet below ground surface. The nearest municipal well, Wells Acres Development well, is located approximately 0.25 miles west of the property. The nearest private well is located approximately 1.25 miles north-northwest of the property. An estimated 88,535 individuals are served by groundwater sources within 4-radial miles of the Fredericks property.

Four wells within the FIP, as well as two drinking water wells located 0.6 miles southeast of the Fredericks property, have been periodically sampled by the Connecticut Department of Health Services (CT DHS) beginning in June 1975. Analytical results indicated the presence of several volatile organic compounds (VOCs) at concentrations ranging from 20 to 1,000 parts per billion (ppb), including 1,1,1-TCA at 1,000 ppb, chloroform at 680 ppb, perchloroethylene (PCE) at 640 ppb, and trichloroethylene (TCE) at 430 ppb. Their concentrations in these wells have generally decreased since 1975, but chlorinated solvents were still present as of the latest sampling round on 12 July 1995.

On 12 July 1995, Roy F. Weston, Inc. (WESTON®) Superfund Technical Assessment and Response Team collected groundwater and drinking water samples from one monitoring well and seven public supply wells in the vicinity of the FIP. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) analyses indicated concentrations of two VOCs exceeding the Maximum Contaminant Level (MCL): PCE at 25 micrograms per liter (μg/L) and TCE at

13 μg/L. In addition, other VOCs were detected at concentrations below the MCL, including 1,1,1-TCA; 1,1-dichloroethylene; cis-1,2-dichloroethylene; and 1,2,3-trichlorobenzene.

The Fredericks property slopes gently from the northwest to the southeast. There are no stormwater catchbasins located on the property. Surface water runoff is generally directed to the West Branch of the Scott Swamp Brook, located approximately 600 feet east of the Fredericks property. The 15-mile surface water pathway includes Scott Swamp Brook, which flows into the Pequabuck River and then converges with the Farmington River. The 15-mile surface water pathway terminus is located along the Farmington River near Simsbury, Connecticut. There are no known drinking water intakes along the 15-mile surface water pathway.

The nearest residence is located at 10 Fable Lane, approximately 600 feet west of the Fredericks property. An estimated 2,650 people live within 1-radial mile and an estimated 86,826 people live within 4-radial miles of the Fredericks property. No sensitive terrestrial environments are located on the property. Approximately 1,307 acres of wetlands are located within 4-radial miles of the Fredericks property. In addition, there are 18 occurrences of State of Connecticut threatened/endangered species and 19 occurrences of State of Connecticut species of concern which utilize habitats within 4-radial miles of the Fredericks property.

J.F. FREDERICKS TOOL COMPANY
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